

WHAT DO YOU KNOW AND WHAT WILL YOU DO ABOUT PHOSPHORUS? A SURVEY OF DAIRY FARMERS

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Introduction

It is critical to understand current farm practices and farmer knowledge in order to develop appropriate agricultural research objectives and outreach approaches. For example, the role of phosphorus (P) in plant nutrition and environmental quality is well understood by researchers and has been a topic of private and public farmer training programs, especially in the past few years. What do dairy farmers understand about phosphorus? How does this understanding relate to local program efforts or farm size? Our objective was to answer these and related questions.

Materials and Methods

We developed a four-page questionnaire of multiple choice, true-false, fill-in-the-blank, and open-ended questions. Sections included "Soil testing and commercial fertilizer use," "Phosphorus information," "Manure management," "Your views," and "Your farm." The questionnaire was sent by mail to all dairy farmers in four counties in southeastern Minnesota and one county in west central Wisconsin in fall 1999. The survey was accompanied by a letter signed by the county extension educator. A reminder postcard was sent 5 weeks later.

Results and Discussion

Response rate of valid returns was 21% (197 respondents). This rate is considered acceptable based on the generic mailing lists used, the lack of incentives for completion, no follow-up phone calls, and the overall inundation of surveys to all dairy farmers from companies, the Agricultural Statistics Service, and universities.

Median number of cows milked was 57, similar to results from several recent surveys in both states. Acreage of corn and soybeans increased with farm size, whereas alfalfa acreage declined. Even with the large farms, alfalfa comprised an average of 30% of the acreage.

Over two-thirds of the farmers said they hauled manure daily or weekly. This, too, is consistent with other surveys, and highlights the need for research and education aimed at

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helping these farmers manage manure. Farmers that relied on daily or weekly manure hauling had a median herd size of 50 cows in both states. In contrast, farmers that applied manure only once or twice per year had median milking herds of 51 cows in Wisconsin but 85 cows in Minnesota. This reflects the larger number of large herds in the Minnesota survey and perhaps the more widespread use of manure storage facilities in 'typical' herds in the Wisconsin county.

Farmers with small herds hauled manure less far than those with larger herds. Average distance of manure hauling was about 1 mile for 40 or fewer milking cows, 1.4 miles for 41-60, about 2 miles for larger herds up to 200 head, and 4 miles for milking herds of more than 200 cows. For the same set of herd sizes, the area receiving manure was 49, 75, 170, and 325 acres. The ratio of average area of annually manured land to animal units (milking herd only) was 1.1 across all farms. This ratio must be interpreted cautiously, as we have no information on the numbers of other livestock on the farm, although we do know that three-quarters of the respondents have beef cows and approximately one-half raised feeder cattle.

Dairy farmer knowledge about P appears to be both limited and faulty in the majority of cases. Although most farmers say they use soils tests and follow fertilizer recommendations "exactly" or "somewhat closely," most (74%) did not know the appropriate soil test P level for optimum corn production. Only 15% knew that P does not move appreciably in soil. One in six knew that P affects surface water quality, but the remainder mistakenly thought P also affects groundwater quality or did not know the environmental impact of P. About 40% knew that P concentration is lower than N in both manure and corn, but the remainder incorrectly answered either that P and N levels are equal or that P exceeds N. There was no apparent difference in farmer knowledge between the states.

Whereas only one-third of the farmers said there is "too much fuss over nutrients, fertilizers and the environment," about 75% did not want more regulations on manure management. Most reported that surface water on their farms was as good or better than it was 10 years ago. Although it is conceivable that they correctly evaluate conditions on their farms, this response conflicts with assessments of surface water quality in both states.

Conclusion

There is a great need for improving knowledge about P among our dairy farmers. Inaccurate and incomplete knowledge may contribute to poor on-farm management of nutrients. Nutrient management plans, which are required in many areas, are more likely to be correctly implemented if farmers understand the reasons for limits on application rates, field selection for manure application, etc. In addition, research to improve management of daily or frequent manure hauling scenarios and implementation of improved manure storage and handling processes are needed on the vast majority of dairy farms we surveyed.